FN-LINK欧智通

PRODUCT SPECIFICATION

D211A-WC

Wi-Fi Dual-band 1x1 11ac Module Datasheet

Version:v1.1

D211A-WC Module Datasheet

	Part NO.	Description
Ordering Information	FGD211AWCX-00	RTL8811CU,a/b/g/n/ac/,1T1R,15X32.7X8mm,USB

Customer: _____

Customer P/N:_____

Signature:_____

Date:_____

Office: 14th floor, Block B, phoenix zhigu, Xixiang Street, Baoan District, Shenzhen

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Revision History

Version	Date	Contents of Revision Change	Draft	Checked	Approved
V1.0	2022/04/06	New version	FC	SXL	QJP
V1.1	2022/06/02	Update packaging information	FC	SXL	QJP

1. General Description

1.1 Introduction

The Realtek D211A-WC is a highly-integrated IEEE 802.11 a/b/g/n/ac MAC/Baseband/RF WLAN single chip. For Wireless LAN (WLAN) operation, it supports 1-stream 802.11ac solution with Multi-user MIMO (Multiple-Input, Multiple-Output) STA mode with USB2.0 network interface controller.

D211A-WC baseband implements multiuser Multiple-Input Multiple-Output (MIMO) Orthogonal Frequency Division Multiplexing (OFDM) STA mode with one transmit and one receive path (1T1R). Features include one spatial stream transmission, short Guard Interval (GI) of 400ns, spatial spreading, and support for variant channel bandwidths. Moreover, RTL8811CU-CG provides one spatial stream Space-Time Block Code (STBC) and Low Density Parity Check (LDPC) to extend the range of transmission. As the recipient, the RTL8811CU-CG also supports explicit sounding packet feedback that helps senders with beamforming capability.

This compact module is a total solution for a combination of Wi-Fi technologies. The module is specifically developed for Smart phones and Portable devices.

1.2 Description

Model Name	D211A-WC
Product Description	Support Wi-Fi functionalities
Dimension	L x W x H: 11.3 x 28.6 x 2.48mm
Wi-Fi Interface	Support USB2.0
OS supported	Android /Linux/ Win CE /iOS /XP/WIN7/WIN10
Operating temperature	0°C to 70°C
Storage temperature	-40°C to 85°C

2. Features

General Features

- CMOS MAC, Baseband PHY and RF in a single chip for IEEE 802.11a/b/g/n/ac compatible WLAN
- Support 802.11ac 1x1,Wave-2 compliant with MU-MIMO STA mode
- Complete 802.11n MIMO solution for 2.4GHz and 5Ghz band
- Maximum PHY data rate up to 86.7Mbps using 20MHz bandwidth, 200Mbps using 40MHz bandwidth, and 433.3Mbps using 80MHz bandwidth.
- Backward compatible with 802.11a/b/g devices while operating at 802.11n data rates
- Backward compatible with 802.11a/n devices while operating at 802.11ac data rates.
- IEEE 802.11a/b/g/n/ac compatible WLAN

WLAN Interface

- Complies with USB 2.0 for WLAN controller

3. General Specification

3.1 2.4GHz RF Specification

Feature	**Description**	
WLAN Standard	IEEE 802.11 a/b/g/n Wi-Fi compliant	
Frequency Range	2.400 GHz ~ 2.4835 GHz (2.4 GHz ISM Band)	
Number of Channels	2.4GHz：Ch1 ~ Ch14	
Test Items	**Typical Value**	**EVM**
Output Power	802.11b /11Mbps : 18dBm ± 2 dB	EVM ≤ -10dB
	802.11g /54Mbps : 15dBm ± 2 dB	EVM ≤ -25dB
	802.11n /MCS7 : 14dBm ± 2 dB	EVM ≤ -28dB
Spectrum Mask	Meet with IEEE standard	
Freq. Tolerance	±20ppm	

Test Items	TYP Test Value	Standard Value
Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps PER @ -91 dBm	≤-83
	- 11Mbps PER @ -84 dBm	≤-76
Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps PER @ -94 dBm	≤-85
	- 54Mbps PER @ -76 dBm	≤-68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -94 dBm	≤-85
	- MCS=7 PER @ -75 dBm	≤-67
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0, PER @ -92 dBm	≤-82
	- MCS=7, PER @ -73 dBm	≤-64

3.2 5GHz RF Specification

Feature	Description	
WLAN Standard	IEEE 802.11a/n/ac Wi-Fi compliant	
Frequency Range	4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band)	
Number of Channels	5.0GHz：Please see the table1	
Output Power	802.11a /54Mbps : 15 dBm ± 2 dB	EVM ≤ -25dB
	802.11n /MCS7 : 14 dBm ± 2 dB	EVM ≤ -28dB
	802.11ac VHT20/MCS8: 15dBm ± 2 dB	EVM ≤ -28dB
	802.11ac VHT40/MCS9: 13dBm ± 2 dB	EVM ≤ -30dB
	802.11ac VHT80/MCS9: 11dBm ± 2 dB	EVM ≤ -32dB
Test Items	**Test Value**	**Standard Value**
Receive Sensitivity (11a,20MHz) @10% PER	- 6Mbps PER @ -89 dBm	≤-85
	- 54Mbps PER @ -71 dBm	≤-68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -89 dBm	≤-85
	- MCS=7 PER @ -69 dBm	≤-67
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 PER @ -87 dBm	≤-82
	- MCS=7 PER @ -67 dBm	≤-64
Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0, PER @ -95 dBm	≤-85
	- MCS=8, PER @ -72 dBm	≤-62
Receive Sensitivity (11ac ,40MHz) @10% PER	- MCS=0, PER @ -92dBm	≤-82
	- MCS=9, PER @ -67 dBm	≤-57
Receive Sensitivity (11ac ,80MHz) @10% PER	- MCS=0, PER @ -89 dBm	≤-79
	- MCS=9, PER @ -63 dBm	≤-54

[1]5GHz Channel table

Band (GHz)	Operating Channel Number	Channel Center Frequency (MHz)
5.15GHz~5.25GHz	36	5180
	40	5200
	44	5220
	48	5240
5.25GHz~5.35GHz	52	5260
	56	5280
	60	5300
	64	5320
5.5GHz~5.7GHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	136	5680
	140	5700
5.725GHz~5.825GHz	149	5745
	153	5765
	157	5785
	161	5805
	165	5825

4. ID setting information

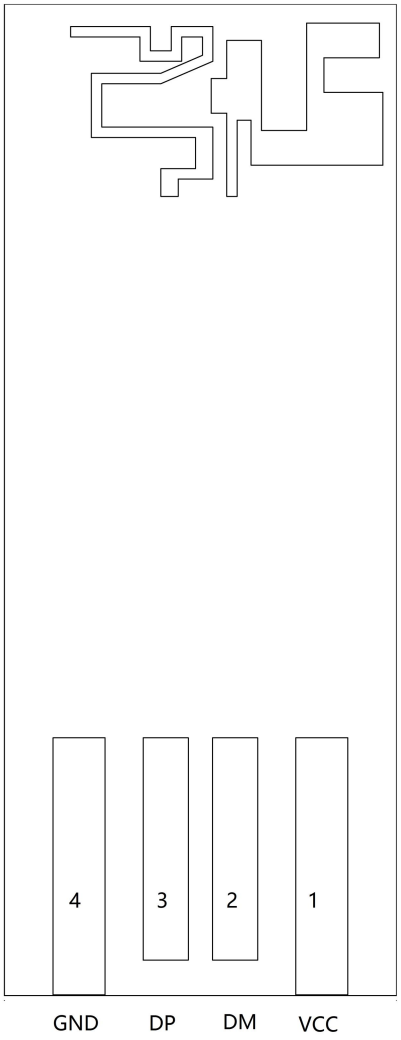
WI-FI

Vendor ID	0BDA
Product ID	C811

5. Pin Definition

5.1 Pin Outline

< TOP VIEW>



5.2 Pin Definition details

NO.	Name	Type	Description	Voltage
1	VCC		Power 5V	
2	DM		Data line D	
3	DP		Data line D+	
4	GND		Ground connections	

P:POWER I:INPUT O:OUTPUT

6. Electrical Specifications

6.1 Power Supply DC Characteristics

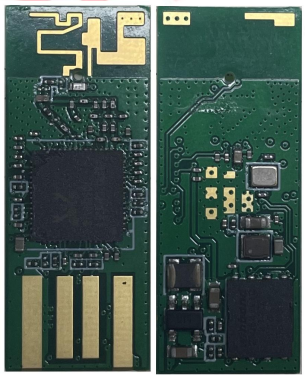
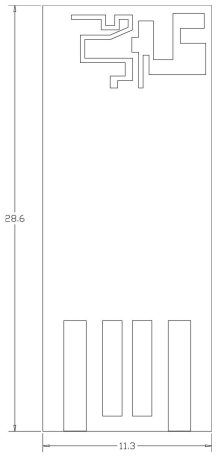
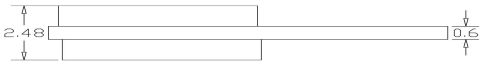
	MIN	TYP	MAX	Unit
Operating Temperature	0	25	70	deg.C
VCC		5		V

6.2 Power Consumption

Power Consumption (Typical by using SWR)	Wi-Fi only: TBD

7. Size reference

7.1 Module Picture

L x W : 11.3 x 28.6 (+0.3/-0.1) mm 	
H:2.48 (±0.2) mm	
Weight	0.82g

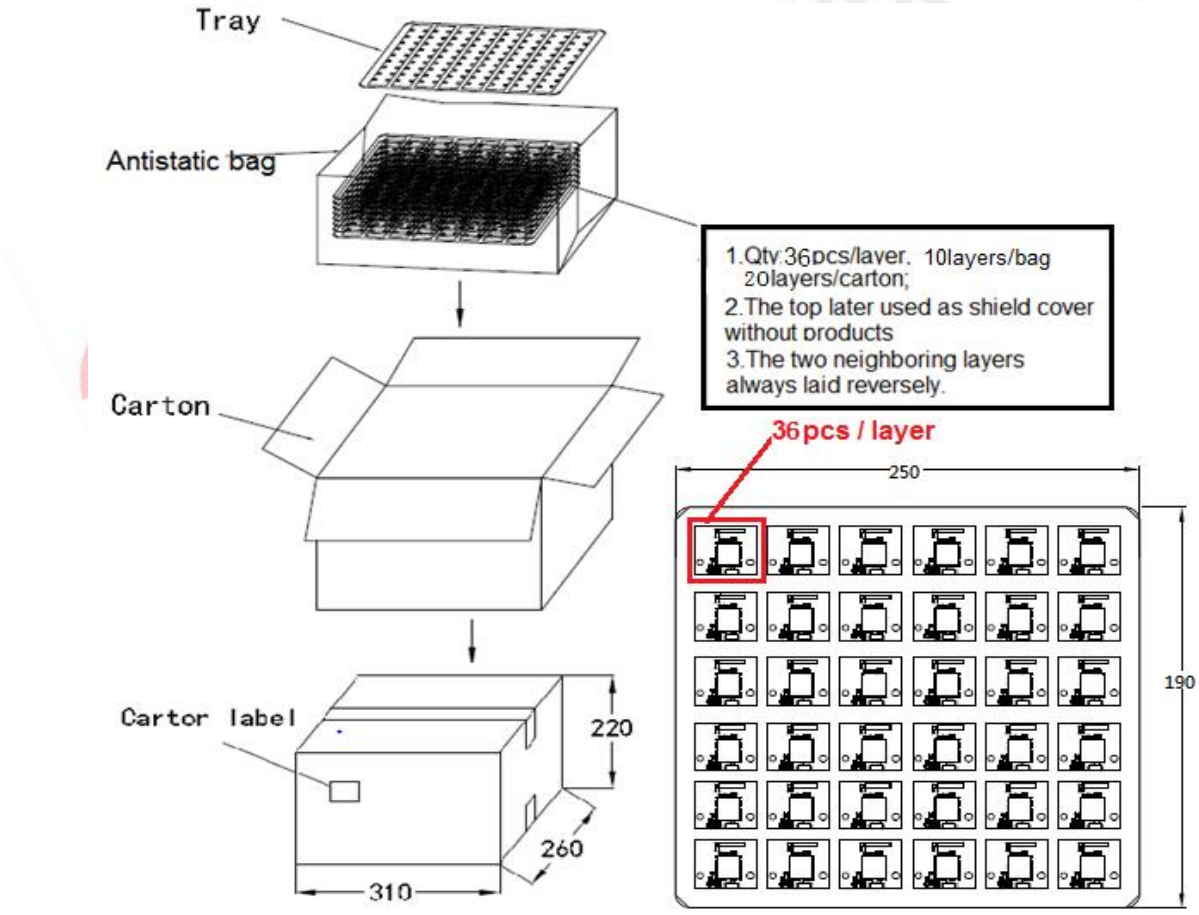
8. The Key Material List

Item	Part Name	Description	Manufacturer
1	PCB	D211A-WC,4L,11.3X28.6X0.6mm	XY-PCB, GDKX, Sunlord, SLPCB
2	Crystal	2016 40MHz 15pF 10ppm	ECEC, Hosonic, TKD, JWT
3	Chipset	RTL8811CU	Realtek
4	DC-DC	SY8088IAAC,BUCK, Vin 2.5~5.5V, 1A	矽力杰 ,芯源

9. Package

9.1 Tray

Layer size: L250.0*W190.0 mm
Layer material: PVC
Carton size: L310.0*W260.0*H220.0 mm
Carton material: A=A



10. Moisture sensitivity

The build-in Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care
all the relatives requirements for using this kind of components.
Moreover, the customer has to take care of the following conditions:

a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)

b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5

c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition

d) “IPC/JEDEC J-STD-033A paragraph 5.2” is respected

e) Baking is required if conditions b) or c) are not respected

f) Baking is required if the humidity indicator inside the bag indicates 10% RH or more